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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,905	01/23/2002	Colin Ramshaw	A01205US	7363

22920 7590 03/29/2006

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EXAMINER

BHAT, NINA NMN

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 03/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/913,905

Applicant(s)

RAMSHAW ET AL.

Examiner

N. Bhat

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-13 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1-18-06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on January 18, 2006 has been entered.

2. Applicant's IDS submitted on January 18, 2006, has been fully and carefully considered.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Staub.

Staub teaches a hollow support element adapted to be rotatable about an axis disposed upon a shaft 15. There is included a support element having two surfaces which is equivalent to applicant hollow rotatable anode wheel having two circular faces there is includes vanes on the second side of the support element (disc). There is a gap created between the two circular wheels. Between the exterior of shaft (25) and the interior of shaft (15) is an inlet passageway for coolant, the coolant is provided by a

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pump through the aperture formed between shat (25) and shaft (15). The coolant is then deflected by the baffle (21) and flow radially outwardly with the tangential fluid velocity of the coolant insured by vanes (23) of the baffle. The coolant upon entering the spinning wheel (13) flows radially outwardly on one side of the baffle to the edge of the baffle and around the outer edge, the coolant then flows radially inwardly on the other side of the baffle through opening (27) in the center of the baffle and out through hollow shaft (25). Free convection heat transfer, nucleate boiling heat transfer and maximum allowable boiling heat flux in nucleate boiling increase with increasing acceleration as the anode wheel spins. In Figure 3, an alternate vane configuration for baffle (21) is shown and increase the heat transfer from the wheel to the coolant in the region where maxim heat input to the target occurs. The apparatus as claimed by Straub fully anticipates applicant's claims as presently drafted.[Note Figure 1 and Figure 3, Column 3, lines 25-65 and Column 4, lines 35-67 and the claims] With respect to applicant's preamble reciting "a reactor", the term "reactor" has not been given any weight because there is nothing in the claims which would distinguish the apparatus as claimed from that of the apparatus as claimed by Staub.

5. Claims 1-4 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Whitaker et al.

Whitaker et al. teach a hollow rotating anode, which is liquid, cooled. Specifically, the hollow anode (20) which is equivalent to applicant's hollow support element, having a first and second surface which is attached to a hollow rotating shaft (21) which is equivalent applicant's hollow drive shaft. A stationary tube (25) extends longitudinally

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and concentrically within the hollow rotatable shaft(21) into the hollow rotatable anode 20. Cooled fluid is pumped through duct (24). The coolant travels toward the anode(20 between the diameter of stationary inner tube (25) and inner diameter of the rotatable hollow shaft (21). The coolant then passes along the inside input face (41) of the anode 920) and outside of input face (42) until it reaches the heat exchange surface (43).

[Note Column 7, lines 57-63 and Column 8, lines 38-63] The hollow anode is provided with axial flow vanes and also there is include a swirl element to impart a swirling motion to the heat transfer fluid. Whitaker et al. teach heat transfer is enhanced by the centrifugal force generated by the swirling motion of the coolant as it traverse the anode heat exchange surface. Disposing converging elements at the input side of axial flow vanes maximizes the swirl flow. Whitaker further teach that after passing the anode heat exchange region the heated liquid flow leaves the axial flow vanes and enters the discharge face of the anode to travel down the face of the anode through the exhaust tube that is concentric with the hollow anode.[Note Column 14, lines 31-65 and Column 15, lines 8 et seq. and Figure 2,5, 7 and 9] With respect to applicant's preamble reciting "a reactor", the term "reactor" has not been given any weight because there is nothing in the claims which would distinguish the apparatus as claimed from that of the apparatus as claimed by Whitaker et al.

6. Claims 11-13 are allowed. The following is an examiner's statement of reasons for allowance: The prior art fails to teach and/or suggest providing an apparatus which includes a hollow support element and a shaft which includes heat transfer fluid to flow between the hollow support element wherein there is provided a rotary impeller or fane

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mounted close to the first surface and operable to generate a gaseous flow from a periphery of the surface towards a central region the flow being counter current to the flow of reactant on the first surface.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



N. Bhat
Primary Examiner
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